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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. 10/849,022 Confirmation No. 7040

Applicant : KIBA, H. et al.
Filed : May 20, 2004
Titled : METHOD AND SYSTEM FOR DATA PROCESSING FOR
CONTROLLING A CACHE MEMORY
TC/AU : 2186
Examiner : TBD
Docket No. : 500.43870X00
Customer No.: 24956

REQUEST FOR RECONSIDERATION
AND
RENEWED PETITION TO MAKE SPECIAL
(ACCELERATED EXAMINATION UNDER MPEP § 708.02(VIII))

Sir:

In response to the Decision on Petition to Make Special mailed September 21, 2005, wherein the Petition was dismissed, the Applicants request reconsideration of their Petition to the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d).

I. RESPONSE TO DISMISSAL

The Petition was dismissed on the grounds that the discussion of the references most-closely related to the invention was confusing, and that the originally-recited first feature of the invention contained essentially all of the limitations of claims 1, 6 and 11. Accordingly, in response, the Petition has been

revised to clarify the discussion of the references, and, in particular, to more clearly point out to the Examiner which limitations of claims 1, 6 and 11 render these claims patentable over the references. Further, the recited distinguishing features set forth below in the revised Petition contain substantially less than all the limitations of claims 1, 6 and 11.

II. REVISED PETITION TO MAKE SPECIAL

Applicants renew their Petition to the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d). In support of this Petition, pursuant to MPEP § 708.02(VIII), Applicants state the following.

(A) REQUIRED FEE

This Petition was accompanied by the required fee set forth in 37 CFR § 1.117(h) when filed on August 11, 2005. No additional fee is due for filing of this Request for Reconsideration and Renewed Petition; however, please charge any additional fees due or refund any over charges to Deposit Account No. 50-1417.

(B) ALL CLAIMS ARE DIRECTED TO A SINGLE INVENTION

Following the Preliminary Amendment filed on the same date as the original Petition, claims 1, 3-6 and 8-11 are pending in the application. All the claims of the application are directed to a single invention. If the Office determines that all claims in the application are not directed to a single invention, Applicant will make election

without traverse as a prerequisite to the grant of special status in conformity with established telephone restriction practice.

As set forth in independent claims 1, 6 and 11, the invention is generally directed to a method of controlling a cache memory in a storage unit. Under independent claim 1, the invention is a cache control method in a data processing system having a computer for executing a program, and a storage unit having a cache memory for storing data transmitted as a result of execution of said program and a disk device for storing data stored in said cache memory, wherein said storage unit responds to an input of a request for storing data transmitted from said program to store the transmitted data in said cache memory, and responds to an input of a request for flushing transmitted from said program to store, in said disk device, the data stored in said cache memory, wherein said flush request is transmitted from said program to said storage unit at the timing of a check point in a transaction process operated by said program.

Furthermore, under independent claim 6, the invention is a data processing system comprising a computer for executing a program, and a storage unit having a cache memory for storing data transmitted as a result of execution of said program and a disk device for storing data stored in said cache memory, wherein said storage unit includes: means responsive to an input of a request for storing data transmitted from said program to store the transmitted data in said cache memory; and means responsive to an input of a request for flushing transmitted from said program to store, in said disk device, the data stored in said cache memory, wherein said flush

request is transmitted from said program to said storage unit at the timing of a check point in a transaction process operated by said program.

Additionally, under independent claim 11, the invention is data processing program for functioning a data processing system having a computer for executing a program, and a storage unit having a cache memory for storing data transmitted as a result of execution of said program and a disk device for storing data stored in said cache memory, said program causing said storage unit to execute a step of responding to an input of a request for storing data transmitted from said program to store the data transmitted from said program in said cache memory, and a step of responding to an input of a request for flushing transmitted from said program to store, in said disk device, the data stored in said cache memory, wherein said flush request is transmitted from said program to said storage unit at the timing of a check point in a transaction process operated by said program.

(C) PRE-EXAMINATION SEARCH

A pre-examination search has been conducted, directed to the invention as claimed. The pre-examination search was conducted in the following US Manual of Classification areas:

<u>Class</u>	<u>Subclass</u>
707	2, 9, 10, 100-102, 104.1, 200-206
711	100, 111-114
713	150, 153, 200, 201

Furthermore, a keyword search was conducted on the USPTO's EAST database, including the US patent database, the published patent applications

database, and the European and Japanese patent abstract databases. In addition, a search for non-patent literature was conducted on the ACM (Association for Computing Machinery) online databases.

(D) REFERENCES DEEMED MOST-CLOSELY RELATED TO THE SUBJECT MATTER ENCOMPASSED BY THE CLAIMS

Based upon a review of the documents located by the search and the documents already of record in the application, the references deemed to be most-closely related to the subject matter encompassed by the claims are listed below.

<u>Document No.</u>	<u>Inventor</u>
US 6069635	Suzuoki et al.
US 6243809	Gibbons et al.
US 6412045	Dekoning et al.
US 20020138699	Okamura
JP 408095861	Azezaki
JP 410320300	Sato

Because all of the above-listed references (as well as any other references uncovered during the search) have been made of record in the present application by an Information Disclosure Statement filed on August 2, 2005, in accordance with MPEP § 708.02(VIII)(D), additional copies of these documents have not been submitted with this Petition.

(E) DETAILED DISCUSSION OF THE REFERENCES

Following a brief discussion of features of the invention in Section (E)(1) below, the references deemed most-closely related are discussed in Section (E)(2)

below, pointing out, with the particularity required by 37 CFR 1.111 (b) and (c), how the claimed subject matter is patentable over the teachings of these documents.

(1) It is Submitted that the Present Invention is Patentable Over the References for the Following Reasons

It is submitted that the cited references, whether taken individually or in combination with each other, fail to teach or suggest the invention as claimed. In particular, the cited references, at a minimum, fail to teach or suggest, as recited in the claims:

a first feature of the present invention, as recited in independent claim 1, comprising a storage unit that responds to an input of a request for flushing transmitted from a program to store, in a disk device, the data stored in a cache memory, wherein the flush request is transmitted from the program to the storage unit at the timing of a check point in a transaction process operated by the program;

a second feature of the present invention, as recited in independent claim 6, comprising a storage unit that includes means responsive to an input of a request for flushing transmitted from a program to store, in a disk device, the data stored in a cache memory, wherein the flush request is transmitted from the program to the storage unit at the timing of a check point in a transaction process operated by the program; and

a third feature of the present invention, as recited in independent claim 11, comprising causing a storage unit to execute a step of responding to an input of a request for flushing transmitted from a program to store, in a disk device, the data

stored in a cache memory, wherein the flush request is transmitted from the program to the storage unit at the timing of a check point in a transaction process operated by the program.

Further, to the extent applicable to the present Petition, Applicants submit that although the distinguishing features may represent a good portion of the claimed invention, the claimed invention including said features and their inter-operation provides a novel method, system and program not taught or suggested by any of the references of record.

2. Discussion of the References Deemed to be Most-Closely Related

The patent to Suzuoki et al., US 6069635, discloses a computer system having a CPU 51, and peripheral devices for providing a desired color lookup table ("CLUT"). In addition, a cache flash command of a specific command is used for flashing contents to a texture cache and the CLUT. Moreover, the texture cache is flashed automatically (while the CLUT is preserved) when a host-to-local or local-to-host transfer is carried out. (See, e.g., Abstract; column 16, lines 4-12; and Figures 1 and 36.)

However, unlike the present invention, Suzuoki et al. not teach or suggest the features of the present invention, such as a flush request that is transmitted from a program to a storage unit at the timing of a check point in a transaction process operated by the program. More particularly, Suzuoki et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent

claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

The patent to Gibbons et al., US 6243809, discloses a computer system with a non-volatile memory ROM 30. ROM 30 has a flash driver 72, and a flash BIOS interface 74. The flash driver 72 allocates an image buffer 80 and an image header 82 in a memory RAM 16. A non-volatile memory image is flashed to a non-volatile memory 30 (step 180). (See, e.g., Abstract; column 1, lines 30-57; column 6, lines 12-61; and Figures 1, 3A and 8.)

However, unlike the present invention, Gibbons et al. do not teach or suggest the features of the present invention, such as a storage unit that responds to an input of a request for flushing transmitted from a program to store the data stored in a cache memory in a disk device. More particularly, Gibbons et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

The patent to Dekoning et al., US 6412045, discloses a storage system having a host computer 10 and host adapters 14-16. Each of the host adapters 14-16 connects to each disk array controller 18 and 20 via host SCSI buses 28 and 30.

The controller 18 (or controller 20) includes a data processor, subprocessor 32, and a cache memory 33. The cache memory 33 can be divided into a cache memory area 34 and an alternative cache memory area 36. The host computer 10 generates a cache flushing parameter within the host computer 10 and then transfers the cache flushing parameter to the controller 18 in order to optimize the performance of the host computer. The cache memory of the controller is flushed in accordance with the cache-flushing parameter by operation of the controller. (See, e.g., Abstract; column 1, line 67, through column 2, line 18; column 8, line 14, through column 10, line 21; and Figure 1.)

However, unlike the present invention, Dekoning et al. do not teach or suggest the features of the present invention, such as a flush request that is transmitted from a program to a storage unit at the timing of a check point in a transaction process operated by the program. Rather, Dekoning et al. merely teach changing parameters used by controllers in determining when to flush the cache. More particularly, Dekoning et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

The published patent application to Okamura, US 20020138699, discloses in the Description of Prior Art, a computer system having a CPU 63, a cache memory

67 (including a cache section 72), and a main memory 69. The data in the main memory 69 is updated by executing flashing in response to a command from the CPU 63. The CPU 63 performs overwriting of data in the cache section 72 and adds dirty information to an associated entry in the cache section 72. (See, e.g., Abstract; paragraphs 5-8; and Figures 6A-6B.)

However, unlike the present invention, Okamura does not teach or suggest the features of the present invention, such as a storage unit that responds to an input of a request for flushing transmitted from a program to store the data stored in a cache memory in a disk device. More particularly, Okamura does not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

The Japanese patent document to Azezaki, JP 408095861, discloses an electronic computer with a cache memory 18a. The electronic computer is equipped with a flash operation block 58. The flash operation block 58 performs a cache flashing operation for writing an updated data of a cache block back to a memory element 12 by inspecting a cache status and performing a flash execution report DF. (See, e.g., Abstract; Constitution; and Figure.)

However, unlike the present invention, Azezaki does not teach or suggest the features of the present invention, such as a storage unit that responds to an input of

a request for flushing transmitted from a program to store the data stored in a cache memory in a disk device. More particularly, Azezaki do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

The Japanese patent document to Sato, JP 410320300, discloses a storage system having a kernel, a write cache 14, a storage device control driver, and a storage device 13. In addition, the storage device control driver controls a storage device 13. Upon detecting an existence of a power supply interruption request (step 22), the kernel outputs a write cache flashing processing request to the storage device control driver. The driver then receives the processing request and executes processing for flashing a write cache 14 in the storage device 13 (step 24). After completion, the driver informs the kernel of the end of the processing (end information). The kernel then executes the power supply interruption processing (step 26). (See, e.g., Abstract; Solution; and Figure.)

However, unlike the present invention, Sato does not teach or suggest the features of the present invention, such as a flush request that is transmitted from a program to a storage unit at the timing of a check point in a transaction process operated by the program. More particularly, Sato does not teach or suggest the above-described first feature of the present invention, as recited in independent

claim 1, the above-described second feature of the present invention, as recited in independent claim 6, or the above-described third feature of the present invention, as recited in independent claim 11.

Therefore, since the cited references, at a minimum, fail to teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 6, and the above-described third feature of the present invention, as recited in independent claim 11, it is submitted that all of the claims are patentable over the cited references, whether the references are taken individually or in combination with each other.

(F) Conclusion

Applicants have conducted what they believe to be a reasonable search, but make no representation that "better" or more relevant prior art does not exist. The United States Patent and Trademark Office is urged to conduct its own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited herein and any other prior art that the United States Patent and Trademark Office may locate in its own independent search. Further, while Applicants have identified in good faith certain portions of each of the references listed herein in order to provide the requisite detailed discussion of how the claimed subject matter is patentable over the references, the United States Patent and Trademark Office

should not limit its review to the identified portions but rather, is urged to review and consider the entirety of each reference, and not to rely solely on the identified portions when examining this application.

In view of the foregoing, Applicants request that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

(G) FEE PAYMENT (37 C.F.R. 1.17(h))


The fee required by 37 C.F.R. § 1.17(h) is to be paid by:

☐ the Credit Card Payment Form (attached) for \$130.00.

☐ charging Account 50-1417 the sum of \$130.00.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417. A duplicate of this petition is attached.

Respectfully submitted,



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